

Phil. Nat. Fakultät
Physikalisches Institut
**Weltraumforschung
und Planetologie**

Justin Tilman
Heliophysics Lead
Office of External Relations
NASA Headquarters
Washington, D.C. 20546-0001
USA

Dear Dr. Tilman:

22. January 2007

I acknowledge that the Physics Institute of the University of Bern (UoB) is providing hardware and services to the IBEX mission (IBEX Principal Investigator is Dr. D. McComas, SwRI, TX). The hardware and the services contributed by UoB are identified in the Letter of Agreement (LOA) signed by Peter R. Ahlf of NASA, for which a copy is attached to this letter. I also acknowledge that Profs. Peter Bochsler and Peter Wurz participate in the IBEX mission at the level of co-investigators.

Institutional support by the Physics Institute will be provided throughout all phases of the IBEX mission for Profs. Peter Bochsler and Peter Wurz. In addition, funding from the Swiss Space Office (SSO) has been obtained to cover the UoB hardware and the services identified in the LOA.

I am looking forward to a successful completion of the hardware activities, a trouble-free launch and a fruitful dataphase of the IBEX mission.

Sincerely,



Prof. Dr. Willy Benz
Institute Director

Enc.: Letter of Agreement (LOA). 18. Jan 2007

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National Aeronautics and
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January 18, 2007

Reply to Attn of: **Office of External Relations**

Professor Dr. Willy Benz
Physics Institute
University of Bern
Sidlerstrasse 5
3012 Bern
Switzerland

Dear Professor Benz:

The National Aeronautics and Space Administration (NASA) and the University of Bern, hereinafter, "the Parties," have expressed a mutual interest in pursuing cooperation on the Interstellar Boundary Explorer (IBEX) mission.

IBEX is a Principal Investigator (PI) managed, Small-class Explorers (SMEX) NASA mission with a scientific objective to discover the global interaction of the solar wind and the local interstellar medium. IBEX will address this objective through global neutral atom imaging of the heliosphere from a high-altitude Earth orbit. By taking global images of charge exchange neutral atoms that arise from the solar wind, pickup ions and energetic protons beyond the termination shock over the energy range ~ 0.01 -6 keV IBEX will enable the three dimensional (3D) visualization of the heliosphere and the resolution of the strength and structure of the termination shock for the first time. The IBEX spacecraft will consist of a spacecraft bus, an IBEX-Hi sensor, an IBEX-Lo sensor and a combined electronics unit.

The purpose of this letter is to establish an Agreement (hereinafter "Agreement") between the Parties to address our mutual understanding of the joint cooperation to be undertaken in support of the IBEX mission.

NASA proposes the following arrangements to govern this cooperation:

Responsibilities of the University of Bern

The University of Bern will use reasonable efforts to carry out the following responsibilities:

1. Design, fabricate, and test (as applicable) the IBEX-Hi Pre-collimator (an element of the IBEX-Hi sensor), the IBEX-Lo Pre-collimator (an element of the IBEX-Lo sensor), and the IBEX- Lo Outer Electrostatic Analyzer (an element of the IBEX-Lo sensor), hereinafter “University of Bern provided hardware;”
2. Report on the schedule and performance of University of Bern provided hardware and test readiness to the IBEX Project;
3. Characterize and provide to the IBEX Project the performance of flight and test conversion surfaces for the IBEX-Lo sensor;
4. Provide facilities and support for assembly, integration, functional and environmental testing, and calibration of the IBEX-Lo sensor;
5. Participate in pre-environmental and pre-ship reviews for the IBEX-Lo sensor;
6. Support any NASA-requested program performance assurance reviews;
7. Ship the University of Bern provided hardware, the IBEX-Lo sensor, all associated documentation, and any NASA-provided Ground Support Equipment (GSE), to the U.S. with coordination assistance from NASA;
8. Provide consultation to NASA on the IBEX-Lo design and the IBEX mission;
9. Participate in the IBEX Science Working Group and IBEX Calibration Working Group; and
10. Participate in IBEX science data analysis, publication, and dissemination of the IBEX science results.

Responsibilities of NASA

NASA, through the NASA Goddard Space Flight Center and Southwest Research Institute (SwRI), shall use reasonable efforts to carry out the following responsibilities:

1. Provide overall project management for the IBEX mission;
2. Design and build the IBEX spacecraft;
3. Provide functional requirements and interface information necessary for the design of the University of Bern provided hardware;
4. Provide performance assurance requirements as applicable to the University of Bern;
5. Ship NASA elements for the IBEX-Lo sensor, including the IBEX-Lo flight subsystems and components, NASA provided GSE, and associated documentation, to the University of Bern for assembly, integration, functional and environmental testing, and calibration activities to be conducted using University of Bern facilities and support;
6. Lead the assembly, integration, test and calibration effort of the IBEX-Lo sensor;
7. Lead technical discussions for the IBEX mission, the IBEX-Hi and Lo sensor development, and science products;
8. Release IBEX science data in a manner consistent with the IBEX Project Data Management Plan;

9. Launch the IBEX flight segment; and
10. Manage the spacecraft and payload operations.

The Parties will, on occasion as mutually agreed, visit respective facilities to participate in integration and testing, and to observe, confer and advise the other Party in regard to aspects of instrument design, development, integration, and testing.

Points of Contact

The NASA point-of-contact for the SMEX program is:

Mr. Willis S. Jenkins, Jr.
Heliospheric Division
Science Mission Directorate
National Aeronautics and Space Administration
Washington, DC 20546-0001, U.S.A.
Phone: +1-202-358-1285
Fax: +1-202-358-3987
E-mail: willis.s.jenkins@nasa.gov

The Goddard Space Flight Center point-of-contact for this mission is:

Mr. Gregory V. Frazier
Mission Manager
Explorers Program Office, Mail Code 410
NASA Goddard Space Flight Center
Greenbelt, MD 20771
Phone: +1-301-286-6619
Fax: +1-301-286-1698
E-mail: gregory.v.frazier@nasa.gov

The IBEX Principal Investigator is:

Dr. David J. McComas
Southwest Research Institute
Space Sciences and Engineering Division
P.O. Drawer 28510
San Antonio, Texas 78228-0510
Telephone: +1-210-522-5983
Fax: +1-210-520-9935
E-mail: DMcComas@swri.edu

The IBEX Project Manager is:

John Scherrer
Southwest Research Institute
Space Sciences and Engineering Division
P.O. Drawer 28510
San Antonio, Texas 78228-0510
Telephone: +1-210-522-3363
Facsimile: +1-210-520-9935
E-mail: jscherrer@swri.edu

The point-of-contact at the University of Bern is:

Professor Dr. Peter Wurz
Physics Institute
University of Bern
Abteilung für Weltraumforschung und Planetologie
Sidlerstrasse 5
3012 Bern
Switzerland
Telephone: +41-31-6314429
Fax: +41-31-6314405
E-mail: Peter.bochsler@sosh.unibe.ch

Financial Arrangements

Each Party will bear the costs of discharging its respective responsibilities under this Agreement, including travel and subsistence of its own personnel and transportation of all equipment for which it is responsible. It is understood that the ability of the Parties to carry out their obligations is subject to the availability of appropriated funds. Should either Party encounter budgetary problems that may affect the activities to be carried out under this Agreement, the Party encountering the problems will notify and consult with the other Party as soon as possible.

Data Rights

The Parties shall have access to and use of the scientific data generated under this Agreement. In accordance with NASA policy, the scientific data applicable to this Agreement will be treated as a public resource and will be made available for public access as soon as is practical. After an initial mission review period of three months upon receipt of each final product, the funding party for each product that is the subject of this agreement will provide the product to the other Party.

Exchange of Technical Data and Goods

The Parties are obligated to transfer only those technical data (including software) and goods necessary to fulfill their respective responsibilities under this Agreement, in accordance with the following provisions, notwithstanding any other provision of this Agreement:

1. All activities of the Parties will be carried out in accordance with their national laws and regulations, including those pertaining to export control and the control of classified information.
2. The transfer of technical data for the purpose of discharging the Parties' responsibilities with regard to interface, integration, and safety shall normally be made without restriction, except as provided in paragraph 1 above.
3. All transfers of goods and proprietary or export-controlled technical data are subject to the following provisions. In the event a Party or its related entity (e.g., contractor, subcontractor, investigators, grant recipient, cooperating entity) finds it necessary to transfer goods or to transfer proprietary or export-controlled technical data, for which protection is to be maintained, such goods shall be specifically identified and such proprietary or export-controlled technical data shall be marked. The identification for goods and the marking on proprietary or export-controlled technical data will indicate that the goods and proprietary or export-controlled technical data shall be used by the receiving Party or related entities only for the purposes of fulfilling the receiving Party's or related entity's responsibilities under this Agreement, and that the identified goods and marked proprietary technical data or marked export-controlled technical data shall not be disclosed or retransferred to any other entity without the prior written permission of the furnishing Party or its related entity. The receiving Party or related entity shall abide by the terms of the notice and protect any such identified goods and marked proprietary technical data or marked export-controlled technical data from unauthorized use and disclosure. The Parties to this Agreement will cause their related entities to be bound by the provisions of this Article related to use, disclosure, and retransfer of goods and marked technical data through contractual mechanisms or equivalent measures.
4. All goods exchanged in the performance of this Agreement shall be used by the receiving Party or related entity exclusively for the purposes of the Agreement. Upon completion of the activities under this Agreement, the receiving Party or related entity shall return or, at the request of the furnishing Party or its related entity, otherwise dispose of all goods and marked proprietary technical data or marked export-controlled technical data provided under this Agreement, as directed by the furnishing Party or related entity.

Intellectual Property:

1. For the purposes of this Article, "Related Entity" includes but is not limited to contractors, subcontractors, grantees, or cooperating entities (or any lower tier contractor, subcontractor, grantee, or cooperating entities) of a Party.
2. PATENTS
 - A. Nothing in this Agreement shall be construed as granting, either expressly or by implication, to the other Party any rights to, or interest in, any inventions of a Party or its Related Entities made prior to the entry into force of, or outside the scope of, this Agreement, including any patents or other forms of protection (in any country) corresponding to such inventions.
 - B. Any rights to, or interest in, any invention made in the performance of this Agreement solely by one Party or any of its Related Entities, including any patents or other forms of protection (in any country) corresponding to such invention, shall be owned by such Party or, subject to paragraph 2.D of this Article, such Related Entity.
 - C. It is not anticipated that there will be any joint inventions made in the performance of this Agreement. Nevertheless, in the event that an invention is jointly made by the Parties in the performance of this Agreement, the Parties shall, in good faith, consult and agree as to: a) the allocation of rights to, or interest in, such joint invention, including any patents or other forms of protection (in any country) corresponding to such joint invention; b) the responsibilities, costs, and actions to be taken to establish and maintain patents or other forms of protection (in any country) for each such joint invention; and c) the terms and conditions of any license or other rights to be exchanged between the Parties or granted by one Party to the other Party.
 - D. With respect to any invention created in the performance of this Agreement and involving a Related Entity, allocation of rights between a Party and its Related Entity to such invention, including any patents or other forms of protection (in any country) corresponding to such invention, shall be determined by such Party's laws, regulations, and applicable contractual obligations.
3. COPYRIGHTS
 - A. Nothing in this Agreement shall be construed as granting, either expressly or by implication, to the other Party any rights to, or interest in, any copyrights of a Party or its Related Entities created prior to the entry into force of, or outside the scope of, this Agreement.
 - B. Any copyrights in works created solely by one Party or any of its Related Entities, as a result of activities undertaken in performance of this Agreement, shall be owned by such Party or Related Entity. Allocation of rights between such Party and its Related Entities to such copyrights shall be determined by such Party's laws, regulations, and applicable contractual obligations.
 - C. For any jointly authored work, should the Parties decide to register the copyright in such work, they shall, in good faith, consult and agree as to the responsibilities, costs, and actions to be taken to register copyrights and maintain copyright protection (in any country).

- D. Subject to the provisions of the Articles entitled, “Exchange of Technical Data and Goods,” and “Release of Results and Public Information,” each Party shall have an irrevocable, royalty free right to reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, and authorize others to do so on its behalf, any copyrighted work resulting from activities undertaken in the performance of this Agreement for its own purposes, regardless of whether the work was created solely by, or on behalf of, the other Party or jointly with the other Party, and without consulting with or accounting to the other Party.

Release of Results and Public Information

The Parties retain the right to release public information regarding their own activities under this Agreement. The Parties shall coordinate with each other in advance concerning releasing to the public information that relates to the other Party's responsibilities or performance under this Agreement. As appropriate, full acknowledgement shall be made by both Parties of the role of the other Party in the IBEX mission.

The Parties shall make the final results obtained from the IBEX mission available to the general scientific community through publication in appropriate journals or by presentations at scientific conferences as soon as possible and in a manner consistent with good scientific practices.

Each Party shall have an irrevocable, royalty free right to reproduce, prepare derivative works from, distribute to the public copies of, present publicly, and authorize others to do so on its behalf, the scientific information included in each such publication or presentation for its own purposes. The royalty free right shall exist irrespective of any copyright protection applicable to each such publication or presentation.

The Parties acknowledge that the following data or information does not constitute public information and that such data or information shall not be included in any publication or presentation by a Party under this article without the other Party's prior written permission: 1) data furnished by the other Party in accordance with the “Exchange of Technical Data and Goods” section of this Agreement which is export-controlled, classified or proprietary; or 2) information about an invention of the other Party before a patent application has been filed covering the same, or a decision not to file has been made.

Customs Clearance

In accordance with its laws and regulations, each Party shall facilitate free customs clearance and waiver of all applicable customs duties and taxes for equipment and related goods necessary for the implementation of this Agreement. In the event that any customs duties or taxes of any kind are nonetheless levied on such equipments and related goods, such customs duties or taxes shall be borne by the Party of the country levying such customs duties or taxes. The Parties' obligation to facilitate duty-free entry and exit of

equipment and related goods is fully reciprocal. Each of the Parties shall facilitate the movement of the persons and goods necessary to comply with this Agreement into and out of its territory, subject of its laws and regulations.

Liability and Risk of Loss

With regard to activities undertaken pursuant to this Agreement, neither Party shall make any claim against the other, employees of the other, the other's related entities (e.g., contractors, subcontractors, investigators, or their contractors, subcontractors, or employees of the other's related entities), for any injury to, or death of its own employees or employees of its related entities or for damage to or loss of its own property or that of its related entities, whether such injury, death, damage or loss arises through negligence or otherwise.

The Parties further agree to extend this provision to their own related entities by requiring them, by contract or otherwise, to waive all claims against the other Party, related entities of the other party, and employees of the other party or of its related entities for injury, death, damage or loss arising from activities undertaken pursuant to this Agreement.

This cross-waiver of liability shall not be applicable to:

1. Claims between a Party and its own related entity or between its own related entities;
2. Claims made by a natural person, his/her estate, survivors or subrogates for bodily injury, other impairment of health, or death of such natural person;
3. Claims for damage caused by willful misconduct;
4. Intellectual property claims;
5. Claims for damage based upon a failure of the Parties to extend the provision as set forth above or from a failure of the Parties to ensure that their related entities extend the provision as set forth above; or
6. Contract claims between the Parties based on express contractual provisions.

For avoidance of doubt, this cross-waiver of liability includes a cross-waiver of liability arising from the Convention on International Liability for Damage Caused by Space Objects (which entered into force on September 1, 1972), where the person, entity, or property causing the damage is involved in Protected Space Operations, and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations.

Nothing in this section shall be construed to create the basis for a claim or suit where none would otherwise exist.

Registration of Space Objects

The United States shall register the IBEX spacecraft as a space object in accordance with the Convention on the Registration of Objects Launched into Outer Space (the Registration Convention), which entered into force on September 15, 1976. Exercise of jurisdiction and control over IBEX spacecraft shall be subject to the relevant provisions of this Agreement.

Mishap Investigation

In the case of a mishap or mission failure, the Parties agree to provide assistance to each other in the conduct of any investigation. In the case of activities, which might result in the death of or serious injury to persons, or substantial loss of, or damage to, property as a result of activities under this Agreement, the Parties agree to establish a process for investigating each such mishap as part of their program/project implementation agreements.

Consultations/Settlement of Disputes

The points of contact shall consult promptly with each other on all issues involving interpretation or implementation of this Agreement.

Any matter that has not been settled in accordance with the above paragraph shall be referred to the appropriate program managers for both NASA and the University of Bern. These program managers will attempt to resolve all issues arising from the implementation of this Agreement. If they are unable to come to agreement on any issue, then the dispute will be referred to the Agreement signatories, or their designated representatives, for joint resolution.

Continuing Obligations

The obligations of the Parties set forth in the provisions of this Agreement concerning Liability and Risks of Loss, Inventions and Patent Rights; Exchange of Technical Data and Goods and Customs Clearance shall continue to apply after the expiration or termination of this Agreement.

Choice of Law:

U.S. Federal law governs this agreement for all purposes, including, but not limited to, determining the validity of the agreement, the meaning of its provisions, and the rights, obligations and remedies of the parties.

Entry into Force and Termination

This Letter of Agreement will enter into force upon the date of the University of Bern's affirmative reply. It shall remain in-force for five (5) years from this letter date. It may be extended or amended by mutual written agreement of the Parties. Either Party may terminate this Agreement after at least six months' written notice of its intention to terminate the Agreement.

If the above terms and conditions are acceptable to the University of Bern, we propose that this letter, together with your affirmative reply, document our joint understanding as to the implementation of this cooperative effort.

Sincerely,

A handwritten signature in dark ink, appearing to read "Peter R. Ahlf", with a small flourish at the end.

Peter R. Ahlf
Director, Science Division
Office of External Relations